



UNITED STATES PATENT AND TRADEMARK OFFICE

im
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/020,951

12/19/2001

Masatoshi Fukuda

011724

8648

23850

7590

04/03/2003

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

LANDAU, MATTHEW C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 04/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,951

Applicant(s)

FUKUDA ET AL.

Examiner

Matthew Landau

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 3 and 4 are objected to because of the following informalities: the limitation “toward to the upper cylinder edge” should be replaced with “toward [to] the upper cylinder edge”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 and 7-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation “the rest portion”. There is insufficient antecedent basis for these limitations in the claims. It is unclear what structural element “the rest portion” refers to.

In regards to claims 3 and 4, the limitation “a peripheral length of a cylinder is gradually increased” renders the claim indefinite. The meaning of this limitation cannot be determined. It is unclear what is meant by “a peripheral length”. For the purpose of this Office Action, it is considered this limitation carries the same meaning as “a thickness gradually thickened”, as recited in claim 2.

In regards to claim 7 and 8, it is unclear what surface of the storage electrode is the “inner surface”. Is the inner surface the surface in facing the dielectric or the surface opposite the

Art Unit: 2815

dielectric? For the purpose of this Office Action, the “inner surface” is interpreted to be the surface of the storage electrode facing the capacitor dielectric.

In regards to claim 9, it is unclear what structural element “a rest portion” refers to.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada.

In regards to claim 1, Figure 1b of Yamada discloses a semiconductor device comprising: a capacitor formed above a semiconductor substrate 1 and including a cylindrical shaped storage electrode 10b (column 4, lines 48-52), a capacitor dielectric film 11b formed on the storage electrode 10b, and a plate electrode 12 formed on the capacitor dielectric film 11b, an upper cylinder edge of the storage electrode 10b being rounded and having a larger thickness than a thickness in the rest portion.

In regards to claim 2, Figure 1b of Yamada discloses the storage electrode 10b has a thickness gradually thickened toward to the upper cylinder edge. Note upper cylinder edge is the uppermost portion of 10b, directly above the top of element 9b.

In regards to claims 3 and 4, as best the examiner can ascertain the claimed invention, Figure 1b of Yamada discloses a side surface of the storage electrode 10b is tilted and a peripheral length of a cylinder is gradually increased toward the upper cylinder edge.

Art Unit: 2815

In regards to claims 7 and 8, as best the examiner can ascertain the claimed invention, Figure 1b of Yamada discloses an inner surface of the storage electrode 10b at a border portion between a side surface and a bottom surface is rounded.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada in view of Nam et al. (US Pat. 6,380,579 B1, hereinafter Nam).

In regards to claim 9 and 11, the difference between Yamada and the claimed invention is the storage electrode being formed of a metal film. Figure 4 of Ham discloses a capacitor with a storage electrode (33a,29a) formed of platinum (column 6, lines 53-55). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Yamada by forming the storage electrode from a metal film. The ordinary artisan would have been motivated to modify Yamada in the manner described above for the purpose using a conductive material that is resistant to oxidation.

In regards to claim 10 and 12, Figure 1b of Yamada discloses the storage electrode 10b has a thickness gradually thickened toward to the upper cylinder edge.

Response to Arguments

Applicant's arguments filed January 31, 2003 have been fully considered but they are not persuasive.

In response to Applicant's argument that "Yamada does not have a cylindrical-shaped body", Yamada discloses that sidewall insulation film 9b has a hollow pillar shape. A hollow pillar shape is structurally equivalent to a cylinder. Figure 1b of Yamada teaches the storage electrode 10b lines the inside of film 9b; therefore it also has a cylinder shape.

In response to Applicant's argument that Yamada does not teach or suggest "an upper cylinder edge of the storage electrode being rounded and having a larger thickness than a thickness in the rest portion", Figure 1b of Yamada teaches the upper portion of the storage electrode (above the top of film 9b) is rounded. This portion is an edge, it is on the upper end of the cylinder, therefore it is considered that an upper cylinder edge of the storage electrode 10b is rounded.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

Art Unit: 2815

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

The examiner can normally be reached from 8:00 AM-4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Matthew C. Landau

Examiner

March 28, 2003